



January 7, 1985  
GAS-85-03

Dr. Joshua Lederberg  
President, Rockefeller University  
1230 York Avenue  
New York, NY 10021-6399

Dear Dr. Lederberg:

At the last Celanese Scientific Advisory Board meeting I presented some summary information regarding the use of PBI microporous beads in clinical diagnostics. You mentioned the possibility of identifying someone to help assess or guide our interest in PBG (porphobilinogen) analysis. Hopefully, the following will provide you with some general information regarding our current status that will be useful in providing some guidance.

As you recall, we are trying to identify possible commercial applications of PBI microporous resins as an adsorbent or ion-exchanger. The ability to adsorb polar compounds from polar solvents led us to establish a research contract with Dr. James Yuan (Clinical Chemist) at Old Dominion University. His program examined the adsorption/desorption of a variety of proteins, enzymes, and clinically interesting compounds. Among the compounds examined was PBG.

Yuan's work examined adsorption using unmodified and sulfonated PBI. He found that PBG, VMA (vanilmandelic acid), delta-aminolevulinic acid (ALA), and vitamin B-12 all were bound to the unmodified PBI resin. Thyroxine and epinephrine showed no affinity toward the unmodified resin. Using a sulfonated PBI resin, VMA and B-12 were adsorbed whereas PBG, ALA, Thyroxine, and epinephrine were not. Yuan subsequently examined procedures to desorb compounds from the resins and worked out conditions to recover: 1) PBG in near 100% amounts from unmodified resin, 2) VMA and B-12 in almost 100% yields from sulfonated resin. Specifically for PBG, it was adsorbed onto unmodified PBI from a 0.1 mg/ml concentration in a sodium phosphate buffer (pH 6.0). Recovery (~98%) was achieved by desorption using a one-molar sodium chloride buffer.

This work led Yuan to the proposed development of specific clinical diagnostic kits for PBG, VMA, and B-12. We have just initiated a program with him to proceed. The charter includes development of all components, testing on urine and blood samples, and statistical reproducibility.

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This area, although new to us, represents a "step-out" potential. We would appreciate any assistance you could provide with PBG, any of the other compounds, or leads to more important targets where PBI might be of utility.

Sincerely yours,

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